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Grandparents in Multigenerational Households

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Abstract

This study provides a profile of the households with coresident grandparents, using the European Community Household Panel. It identifies rising rates of coresidence with grandparents in Portugal between 1994 and 2001, and explores the nature of such trend, using an age-period-cohort approach.

Households with grandparents became economically worse than the general population, with skipped-generation households in the worst situation.

Multigenerational households may be formed in a particular generation's interest. Although no formation is directly available, indicators suggest that it is the needs of the younger generations that account for most coresidence situations. One possible benefit of this type of coresidence is the provision of caring services. Very significant proportions of coresident grandparents take care of children, especially small children.

Although the proportion of coresident grandparents is the highest in the North region, it is more frequent in the Lisbon (capital) region for these grandparents to take care of children. Skipped generation households are also more concentrated in the Lisbon region.

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Fertility rates have been falling and women now tend to give birth later in life. For these reasons, the likelihood of becoming a grandparent is diminishing. On the other hand, people are living longer, thereby increasing the probability of experiencing grandparenthood for long periods. This changing age structure has paved the way for more important multigenerational bonds, namely between grandparents and grandchildren, and longer 'shared lives' (Bengtson 2001; Wilton & Davey 2006; Szinovacz 1998).

The recognition of this effect of population ageing has prompted interest in the study of grandparenthood. Part of the literature has focused on the categorization of the grandparents-grandchildren relationships, and on the roles grandparents play in their grandchildren's lives (Bengston 1985, 2001; Jendrek 1994; Szinovacz 1998; Reynolds et al. 2003; Musil et al. 2006).

Bengston (1985) highlights some of the symbolic roles of grandparenthood: being an anchor of stability and serving as an expression of family continuity; providing help, support and protection if needed; arbitrating in intergenerational relationships; and participating in the family's construction of its history. Szinovacz (1998) further adds to these features the functions of serving as a role model and providing economic resources. The contribution to stability and nurturance is particularly necessary in a context of increased marital instability with large divorce rates. Bengtson (2001) speaks of intergenerational solidarity, and identifies six dimensions of this: affectual, associational, consensual, functional, normative and structural. Barranti (1985) emphasizes the grandparent-grandchild relationship as "a family resource for the entire family system".

A rather objective identification of a manifestation of such resource value can be found in Kellam, Ensminger & Turner (1977). They conclude that children of single mothers do better in school if a grandmother is present in the household. Uhlenberg (2000) also reports the existence of several areas in which the presence of a grandparent in the household increases the well-being of adolescents. However, Moyi, Pong & Frick (2004), using later data and covering 25 countries, reach a different sort of conclusion. Pittman & Boswell (2008) also find that children in low-income urban multigenerational households have more problematic behaviours than other low income urban households, although the direction of causality is not identified.

The relationship between grandparent and grandchild is influenced by many factors: the age of both parties, the marital status of the grandparent(s) and of the middle generation, the grandparents' and middle generation's employment status, economic status, education, number of grandchildren, the quality of the relationship with the middle generation, gender, proximity in residence, etc. 'Zero distance' (Moyi, Pong & Frick 2004) is not just quantitatively different, but also qualitatively different from any other distance. It offers distinct interaction possibilities.

Although the quality and meaning of relationships cannot be directly inferred from frequency of contact, some roles are more difficult to perform at a distance – such as the provision of physical help as a caregiver. Fuller-Thomson et al. (1997) find that coresident grandparents are considerably more likely to be caregivers than grandparents without children in the home.

Coresidence may exist to serve mainly the grandparents' needs or the younger generations' needs (Aquilino 1990; Lee and Dwyer 1996; Szinovacz 1996, 1998; Ward et al. 1992). In a study of grandparents providing care to grandchildren, Fuller-Thomson and Minkler (2001, p. 107) write: "The presence of coresident children (which is also likely to increase the odds of coresident grandchildren) is a strong predictor of extensive as opposed to intermediate care provision."

We may distinguish between coresident and non-coresident grandparents. Either of these may or may not be caregivers. It is possible that the younger generations are the caregivers to the old generation. Coresident grandparents that are caregivers may be custodial or non-custodial, i.e. they may find themselves in the place of the middle generation or they may be helping the middle generation. When the grandparents take care of the grandchildren without the presence of the middle generation, such a situation constitutes a skipped-generation household.

A number of contemporary social problems are presented in the literature to justify a rise in the number of custodial grandparents: substance abuse, AIDS, divorce rates, teenage pregnancy. Conditions affecting the middle generation, such as mental or physical illnesses, death, incarceration, perpetration of child abuse and neglect, are other reasons for the existence of custodial grandparents (Burton 1992; Jendrek 1994; Pebley & Rudkin 1999; Knapp & Muller 2000; Caputo 2001).

Custodial grandparenting may represent a significant burden and be felt as an out-of-time responsibility. In fact, all caregiving may be a burden if it is felt as an obligation. Grandparent caregivers may experience economic, health and mental health problems, as well as social isolation (Minkler & Roe 1996; Burnette 2000; Minkler & Fuller-Thompson 1999; Lee et al. 2003; Wang & Marcotte 2007; Bowers & Myers 1999; Burton & Bengtson 1985; Mills et al. 2005). However, some caregiving grandparents find their role rewarding (Reynolds et al. 2003; Goodman & Silverstein 2006)

Intra-family activities increase the welfare of society. Unpaid activities like caring for relatives should be added to gross domestic product when evaluating the welfare of society. (Knapp & Muller 2000).

Portugal makes a fine case study because of its unique characteristics, which place it between a Mediterranean and a liberal welfare regime: a shortage of resources to finance social polices (Mediterranean) and a high activity ratio of women, with no protection of their family roles (liberal)

(Trifiletti 1999). These characteristics suggest that a potentially very important role is played by informal care and extended household structures.

In this paper, we focus on the coresidence phenomenon involving grandparents and grandchildren, between 1994 and 2001. We provide information on these extended households including their prevalence at national and regional levels, and profile. A distinction of several types of households with grandparents is made in this characterization. We investigate whether it is possible to decompose age, period and cohort effects in the observed trend of the proportion of individuals of a certain age who are coresident grandparents. Recognizing the potential importance of the provision of care, we follow the same procedure with the evolution of the proportion of coresident grandparents providing care for children.

1. Data

We use longitudinal data from the European Community Household Panel (ECHP) for Portugal, survey waves 1-8, covering 1994-2001. The survey is targeted at individuals living in private households. There are two units of analysis: the individual and the household. The response rates for Portugal are high: generally over 90 percent. The ECHP provides weights designed to make it cross-sectionally representative by correcting any sampling distortion and ensuring that the data reflects the population structure by sex, age, household size and other criteria. The cross-section weights that we use correspond to the variable RG002 when the unit of analysis is the individual, and to HG004 when the unit of analysis is the household.[1]

Although studies based on a few interviews may provide interesting qualitative details, the use of data from as large a survey as the ECHP allows the calculation of concrete statistics on an issue.

2. Methods

Our focus of interest is coresident grandparents (CGPs): individuals who live in the same household as at least one grandchild. We use two different lines of analysis. In the first stage, we provide a descriptive demographic and economic profile of households that include at least one grandparent. In this part of the analysis, the household is the unit of observation. In the second stage, we investigate whether it is possible to decompose age, period and cohort effects in the observed trend of the proportion of individuals of a certain age who are CGPs. We repeat the exercise with the proportion of CGPs of a certain age that take care of children, since one possibly important benefit of coresidence is the facilitation of the provision of care. In these models, the unit of analysis is the individual.

Age-Period-Cohort (APC) models make it possible to separate the evolution of a variable into different sources of variation.

Age effects are associated with changes in the life course. Age effects regarding the proportion of individuals of the same age that coreside with grandchildren may arise for different reasons. If coresidence originates mainly in the interests of the younger generations, such as providing a carer for children or offering help in household expenses for unemployed or precariously employed adult children, grandparents in their 60s should exhibit higher rates of coresidence than grandparents in their 80s, for instance. On the contrary, if coresidence mainly arises from the needs of frail elderly persons that cannot live independently anymore, we would expect coresidence rates to mainly grow with age, particularly after a certain age. A mixture of the two may result in approximately null age effects.

Period effects measure the effect of contemporary circumstances, such as short-run economic-cycle fluctuations or social policy developments. If, for instance, an important reason for coresidence between different generations is the unemployment of the younger generations, which does not allow

them to have an independent household, times of higher unemployment will be associated with a higher incidence of multigenerational households.

Cohort effects measure trends associated with social change. Individuals that belong to the same birth cohort experience "similar societal circumstances during their formative years" (Coenders & Scheepers 1998, p. 408), which may be reflected in a typical behavior pattern. As new cohorts reach grandparenthood, they may display different preferences for coresidence with younger generations. Also, different cohorts of younger generations may have distinct attitudes towards elderly parents/grandparents who cannot live independently.

It is well known that there is an identification problem with the linear additive APC model, where all three groups of dummies are introduced: one of age categories, one of period categories, and another of cohort categories. The perfect linear relationship that exists between the three effects (Age = Period – Cohort, for example) implies that they cannot be separately estimated.

Since the pioneering work of Mason et al. (1973), several solutions have been proposed for the identification problem. The conventional solution has been to set constraints for the parameters being estimated, but there are other more recent approaches that promise to be more reliable. One of those is the intrinsic estimator approach (Fu 2000; Yang et al. 2004; Yang et al. 2007; Fu 2008). The intrinsic estimator is based on estimable functions that are invariant to the selection of constraints for the parameters.

Yang et al. (2004) show that the intrinsic estimator method produces a smaller variance than the classical methods of setting an arbitrary constraint. The complete additive linear APC model is not identified in the sense that there are multiple estimators that fit the same values. Each of these estimators may be decomposed into two parts, one of them remaining independent of the arbitrary constraint that was set to obtain the estimator. That part is the intrinsic estimator.

There are as yet few examples of papers using this form of the APC model, and we would like to use it in this paper. It has recently and conveniently been included in software packages such as Stata and S-Plus. We use Stata in our estimations.

3. Results

3.1. Coresident grandparents' profile

Coresidence with grandparents increased during the period of analysis, as can be seen by observing either the proportion of households with grandparents or the proportion of individuals of a certain age between 32 and 84 that coreside with grandchildren[2]. See Figure 1. The rising rates of multigenerational households are not exclusive to Portugal; see, for instance, Mills (2001).

Using ECHP data, weighted through the use of HG004, we obtained the characterization of households with grandparents that is summarized in Table 1.

A considerable percentage of households has at least one grandparent coresiding with at least one grandchild. This percentage rose during the period of analysis. We can confirm that these values are indeed very large, when compared with the values of the 2000 Census for the US: 3.9 percent (Simmon & Dye 2003).

There are more households with grandmothers than households with grandfathers. This may be explained by the greater longevity of women, by the higher probability of their not remarrying after widowhood, as well as by their traditional caring role. Less than half of the households with grandmothers are households with both grandmothers and grandfathers. Conversely, about 80 percent of households with grandfathers are households with both grandmothers and grandfathers.

One phenomenon accompanying the ageing of the population is the reduction in the number of available children to take care of each elderly parent. This might lead to a rise in the number of households that include parents of both spouses. Curiously, we find very few examples of this kind of situation in our sample: only four households, two of them in two waves, and the other two in only one wave. Most of the households with more than two individuals identified as CGPs are *beanpole* households, with four generations living together, but that do not include parents of both sides of a couple.

The percentage of skipped-generation households is much smaller than the percentage of three-generation households, but while the average age of all CGPs has not changed much, the average age of CGPs living in skipped-generation households has been rising – Table 2. This may indicate additional difficulties for these CGPs, although it may also result from the fact that the skipped-generation households captured in the sample are basically the same each year, but with their members growing older. It should be noted that these households may include adult grandchildren. In order to have an idea of the relative dimension of these numbers, they may be compared with the 0.9 percent and 1.9 percent estimates for the proportion of skipped-generation households in two different states of the US, made by Mutchler & Baker (2004). Although not directly comparable, Simmons & Dye (2003) mention that in 2000, in the US, grandparents in skipped-generation households accounted for 0.54 percent of all individuals aged 30 and over, while Milan & Hamm (2003) report that, in Canada, 12 percent of CGPs were living in skipped-generation households in 2001.

Most households with grandparents contain children aged under 18.

A very small percentage of households have a teenager with a child living with the teenager's parents. We did not ask whether the teenager was living with or without a partner.

Some information may be used to disentangle whether coresidence is mainly in the younger generations' or the old generation's interest. See Table 3. Of the households with grandparents, between a quarter and a third contain at least one working grandparent. Using the same basis of comparison, between

31 and 38 percent contain at least one child, child-in-law or possibly a grandchild aged 26 or older that is not working at least 15 hours per week. More than half of the households composed of three generations are headed by the oldest generation (downward-extended households). Based on these rough indicators, we would be inclined to say that, in most of these households, coresidence is mainly in the younger generations' interest. [3] Between a quarter and a third of CGPs stated that they take care of children up to 18 years of age and more than half of these take care of children up to 5 years of age. This is certainly an important resource for families, but it is not possible to identify those situations where caring is a motive for coresidence and those where it is simply a by-product.

According to the 2001 Population Census, foreigners with legally established residence are 2 percent of all residents. Using the weighted ECHP data, the proportion of immigrants, in 2001, is 3 percent. As most of these individuals are not Europeans, with very different cultures, we would like to know how distinct their behavior is, in terms of coresidence with grandparents and in terms of provision of care for children. In Table 4 we can see that the percentage of immigrant CGPs that take care of children is generally quite inferior to the percentage of non-immigrant CGP's that engage in such activity.

In order to obtain an idea of how well data from the ECHP represent the population, we compared the percentage of households containing three or more generations based on the 2001 Census data with the percentage of households with grandparents excluding skipped-generation households in the ECHP. The ECHP percentages are a little lower: 9.5 percent as against 11 percent from the Census. Therefore, we should take this into account when analyzing the numbers.

We also compare the different types of households according to their income. Using equivalized income, we calculated the different thresholds for income quartiles for each year. Then we examined the distribution of the different types of households among these quartiles. The first quartile is the one with the lowest income. Our results are summarized in Figure 2.

We can see that, as the years passed, the percentage of households with CGPs in the higher income quartiles has decreased. Households with CGPs were initially not very different from the rest of the households, but have become relatively poorer. Another salient result is that skipped-generation households tend to be considerably concentrated in the lower income quartiles.[4] On the other hand, households with at least one working CGP are usually those that perform better among the households with CGPs.

The observation of the regional distribution of households with CGP yields interesting insights into the distinct contexts of multigenerational coresidence. See Table 5. While the relative dimension of the population in the survey is similar when the North region of Portugal (NR) and the Lisbon and Tagus Valley region (LTVR) are considered, the proportion of CGPs is clearly larger in the NR. However, the proportion of CGP caring for children is much larger in the (LTVR). This is consistent over the whole sample period. In the North, multigenerational coresidence is more common, but CGPs care less for children. The NR includes the second largest Portuguese city, but also some rural areas, while the LTVR is mainly a large urban area. This could indicate that child care by CGPs is more important in urban areas. The regional difference is more notorious with respect to care for children up to 18 years old than for younger children.

The number CGPs in skipped generation households is overly present in the LVTR.

3.2. Age, period and cohort effects

We sought to estimate the complete APC models for the proportion of individuals that are CGPs, as well as for the proportion of CGPs taking care of children both up to 5 years old and up to 18 years old, using the Intrinsic Estimator. Since the Intrinsic Estimator may not reveal true zero effects, it is advisable

to estimate the reduced models and compare them with the complete model, to check if the simpler models are not in fact better than the full APC. (Yang et al. 2007). In case the analysis suggests the three time dimensions are present, we apply the Intrinsic Estimator.

The Akaike (AIC) and Bayesian (BIC) information criteria take into account the parsimony of the models when testing their fit. The best models are those with lower values of AIC and BIC. Clearly, looking at Table 6, the complete APC model is never the one best suited to the data. Basing the decision on the BIC criterion, the models with only period effect were selected for all the three proportions that we modeled. When using the AIC criterion, the models with only period effect were also found to be the best ones for the proportion of individuals of the same age who are CGPs, and for the proportion of CGPs of the same age taking care of children up to 5. Only for the proportion of CGPs of the same age taking care of children up to 18 was the conclusion different when using the AIC criterion: the model with only Age has the lowest value. Nevertheless, the model with only Period does not look much worse. We conclude that it is not adequate to estimate the APC model with the Intrinsic Estimator, and that cohort and age effects are not significant in terms of the tendency for individuals to coreside with grandchildren or in the tendency of CGPs to take care of children.

Our results show that the rising levels of CGPs have been largely driven by period effects. Period effects are also the most important time effects in determining the percentage of CGPs caring for children.

Conclusions

This study indicates that coresidence with grandparents is common in Portugal. The proportion of households with CGPs rose between 1994 and 2001. The rise in the probability of individuals of a certain age coresiding with grandchildren was mainly due to a period effect. Age and cohort effects did not

appear as significant, meaning that this may be a transitory effect that does not reflect a change in preferences for coresidence or in the aging structure of the population.

As is generally found in other countries, grandmothers predominate: they are present in about 90 percent of the households with grandparents and about 80 percent of the households with grandfathers are households with both grandparents, whereas less than half of the households with grandmothers are households with both grandparents.

A frequently mentioned reason for the rise in the number of coresident grandparents is social developments, which have increased the need for grandparents to take the place of absent parents. However, in our sample, taking care of a grandchild born to a teenage child is not a common reason for coresidence. Although skipped-generation households represent a small proportion of the households with CGPs, the fact that they tend to be concentrated in the lower income quartiles is particularly worrisome.

During the period of analysis, households with CGPs generally became worse off.

The formation of multigenerational households may be determined mainly by the needs of the older generation or by the needs of the younger ones. Some indicators seem to confirm the previously found result that it is the needs of the younger generations that account for most coresidence situations.

More than a third of the households with CGPs have a working grandparent, and a similar proportion have a non-working adult aged 26 or older.

One possible benefit of coresidence for the younger generations is the use of caring services provided by grandparents. The evolution of the proportion of CGPs taking care of children between 1994 and 2001 does not present significant age or cohort effects. Very significant proportions of CGPs, take care of children, especially small children, and this is a very valuable resource for families in a country with a welfare system that does not provide enough public caring services for children and where the activity ratio of women is high. Immigrants in Portugal do not seem to use this resort as much as non-immigrants. Although coresidence with grandparents is more common in the North of Portugal, the

proportion of CGPs that take care of children is larger in the Lisbon region, an almost entirely urban region.

NOTES

[1] For a detailed description of the weighting procedure used in the ECHP, see http://www.cmh.ens.fr/acsdm2/equalsoc/ECHP/PAN165-200306.pdf .

[2] We would have liked to base our analysis on the proportion of CGPs, comparing this with the total number of all grandparents, instead of all individuals, but the ECHP structure does not allow this.

[3] Other studies reach the same type of conclusion. See Pebley & Rudkin (1999).

[4] This is in accordance with results expressed in Fuller-Thomson et al. (1997), and Pittman & Boswell (2008), for example.

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Fig. 1- Evolution of coresidence in Portugal between 1994 and 2001

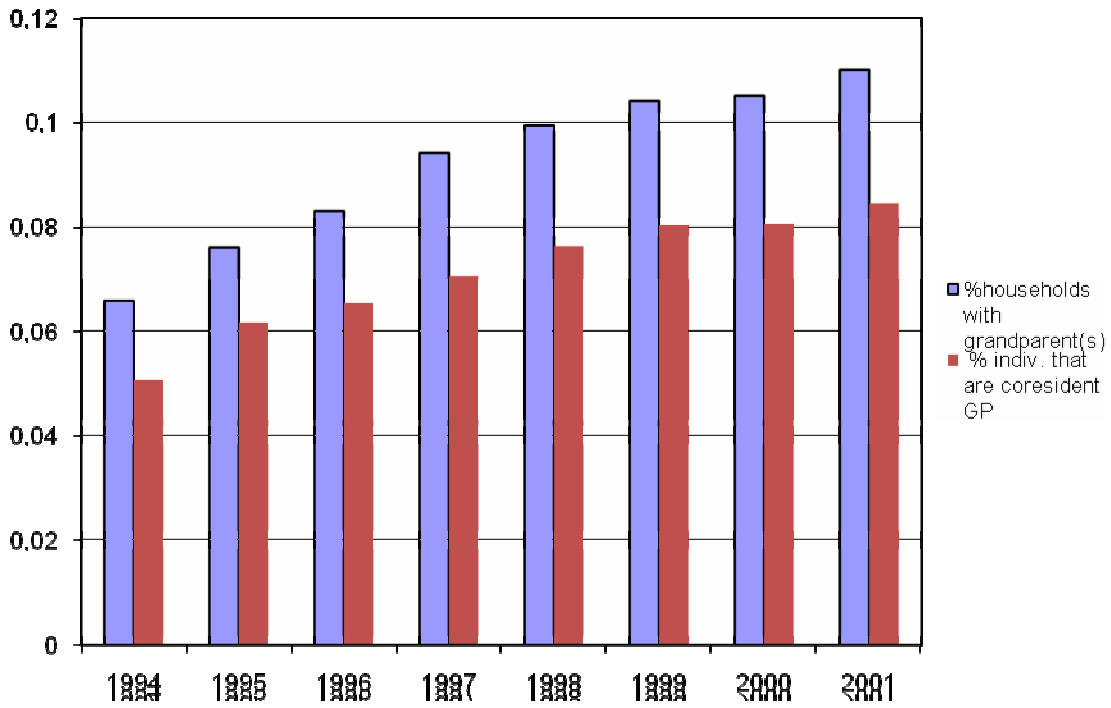
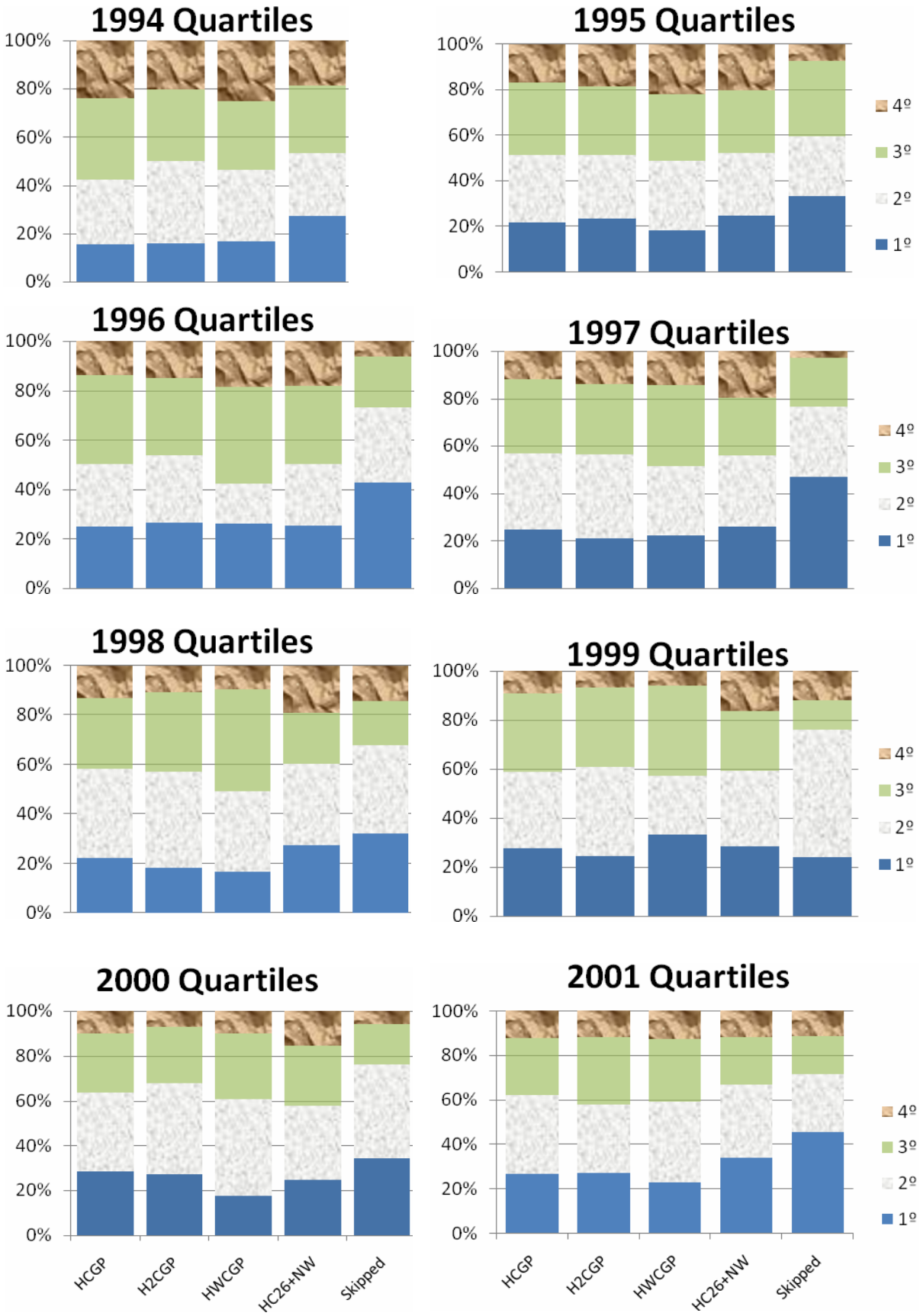


Fig.2- Equivalized income quartiles of different types of households with CGP



Legend of Figure 2: *HCGP*- households with CGP; *H2CGP*- households with at least 2 CGP; *HWCGP*- households with working CGP; *HC26+NW*- households with children aged 26+ not working; *Skipped*- skipped-generation households.

Note: The first quartiles are those with the lowest income levels.

Table 1- Households with Grandparents

	1994	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*
% households with grandparent(s)	6.58	7.61	8.33	9.43	9.94	10.42	10.53	11.01
% households with grandfather	3.05	3.91	4.21	4.48	4.64	5.25	5.14	5.42
% households with grandmother	5.82	6.73	7.34	8.35	8.99	9.33	9.43	9.97
% households with both	2.36	3.13	3.32	3.48	3.71	4.21	4.23	4.55
% skipped-generation households	0	0.55	0.64	0.69	0.87	1.11	0.80	0.80
% households with child up to 5 & grandparent	2.24	2.99	2.83	3.30	3.87	4.20	4.12	4.03
% households with child up to18 & grandparent	5.54	5.97	6.94	7.57	7.98	8.47	8.31	8.63
% households with teenage parent and grandparent	0.04	0.04	0.10	0.07	0.04	0.13	0.14	0.15
% households with teenage mother and grandparent	0.04	0.04	0.01	0.06	0.00	0.12	0.10	0.11

Source: Author's calculations based on ECHP data.

Note: Cases weighted by HG002.

Table 2- Average age of CGPs in different types of households

	Skipped-generation households	Not skipped-generation households
1995	63.92	66.21
1996	64.45	66.38
1997	66.05	66.61
1998	68.04	66.34
1999	66.59	65.55
2000	70.50	65.55
2001	70.94	65.99

Source: Author's calculations based on ECHP data.

Note: Cases weighted by RG002.

Table 3 – Indicators of whether coresidence is mainly in the younger generations' or the older generation's interest

	1994	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*
% households with grandparents*	6.58	7.61	8.33	9.43	9.94	10.42	10.53	11.01
% households with working grandparent*	1.74	2.46	2.45	2.87	2.84	3.63	3.11	3.29
% households with grandparent and non-working adult aged 26 or older*	2.51	2.37	2.78	3.37	3.68	3.36	3.22	3.36
% CGPs caring for children up to 5*	18.23	12.42	16.16	18.55	23.05	23.51	19.46	18.89
% CGPs caring for children up to 18*	28.33	24.49	27.37	30.39	31.36	34.43	30.96	32.25
% 3 generation households where the oldest generation is the householder**								52.1

* Source: Author's calculations based on ECHP data.

** Source: 2001 Census, INE.

Table 4 - Caring grandparents as a percentage of coresident grandparents

	Caring for children up to 5	
	Non-Immigrants	Immigrants
1994	17%	10%
1995	13%	0%
1996	15%	0%
1997	14%	0%
1998	23%	9%
1999	23%	25%
2000	26%	17%
2001	27%	20%
	Caring for children up to 18	
	Non-Immigrants	Immigrants
1994	27%	10%
1995	23%	25%
1996	26%	0%
1997	20%	0%
1998	30%	9%
1999	31%	25%
2000	32%	17%
2001	34%	20%

Source: Author's calculations based on ECHP data.

Note: Cases weighted by RG002.

Table 5 – Regional distribution of coresident grandparents

	1994	1995	1996	1997	1998	1999	2000	2001
Distribution of population (%)								
North	35,47	34,27	33,63	33,20	33,75	34,10	33,69	34,11
Centre	16,90	16,72	16,80	16,92	16,97	17,22	16,72	17,62
Lisbon&Tagus Valley	32,39	34,25	34,56	34,45	34,02	33,48	31,53	32,85
Alentejo	5,61	5,43	5,71	5,80	5,47	5,57	5,17	5,25
Algarve	3,22	3,09	3,33	3,36	3,35	3,32	3,29	3,43
Açores	2,24	2,11	1,88	1,99	2,04	1,94	1,87	1,97
Madeira	2,02	2,02	2,15	2,22	2,22	2,28	2,32	2,45
Invalid/NoResp	2,15	2,10	1,91	2,06	2,18	2,10	5,41	2,31
Distribution of coresident grandparents (%)								
North	39,30	35,47	36,49	35,50	37,72	36,46	36,89	36,34
Centre	17,91	17,36	16,82	16,67	17,34	19,69	20,71	22,83
Lisbon&Tagus Valley	27,21	33,58	33,09	33,17	31,14	31,69	27,51	26,71
Alentejo	4,42	3,40	3,76	4,33	2,89	3,08	3,40	3,88
Algarve	3,72	3,77	3,94	3,67	4,01	3,85	3,56	4,04
Açores	3,26	2,26	2,15	2,33	2,09	1,69	1,78	1,86
Madeira	1,63	1,70	1,61	2,00	1,93	2,00	2,59	2,48
Invalid/NoResp	2,56	2,45	2,15	2,33	2,89	1,54	3,56	1,86
Distribution of coresident grandparents in skipped-generation households(%)								
North	-	23,40	28,85	39,29	38,46	25,93	32,69	28,85
Centre	-	10,64	7,69	7,14	4,62	6,17	7,69	7,69
Lisbon&Tagus Valley	-	48,94	44,23	41,07	46,15	60,49	51,92	51,92
Alentejo	-	4,26	3,85	3,57	4,62	2,47	0,00	3,85
Algarve	-	6,38	7,69	3,57	4,62	3,70	3,85	5,77
Açores	-	0,00	1,92	0,00	0,00	0,00	0,00	0,00
Madeira	-	2,13	1,92	1,79	0,00	0,00	0,00	0,00
Invalid/NoResp	-	4,26	3,85	3,57	1,54	1,23	3,85	1,92
Distribution of coresident grandparentscaring for children up to 5 years old (%)								
North	27,78	31,25	41,67	25,30	35,51	37,16	36,81	35,96
Centre	19,44	21,88	11,90	19,28	9,42	10,81	9,82	12,36
Lisbon&Tagus Valley	33,33	35,94	34,52	39,76	45,65	41,89	39,26	41,01
Alentejo	5,56	1,56	1,19	3,61	1,45	1,35	1,23	1,12
Algarve	2,78	1,56	3,57	3,61	1,45	1,35	1,84	2,25
Açores	2,78	1,56	1,19	2,41	1,45	1,35	1,23	1,12
Madeira	1,39	3,13	2,38	1,20	1,45	2,03	1,84	2,25
Invalid/NoResp	6,94	3,13	3,57	4,82	3,62	4,05	7,98	3,93
Distribution of coresident grandparents caring for children up to 18 years old (%)								
North	29,82	24,19	33,33	27,97	31,22	32,67	33,66	34,42
Centre	16,67	16,13	14,29	16,95	11,64	12,87	13,17	15,35
Lisbon&Tagus Valley	37,72	45,16	42,18	39,83	45,50	44,06	39,02	39,53
Alentejo	4,39	2,42	1,36	4,24	2,12	1,49	0,98	0,93
Algarve	2,63	3,23	3,40	3,39	2,65	2,97	2,93	3,26
Açores	2,63	1,61	0,68	2,54	1,59	0,99	1,46	0,93
Madeira	1,75	2,42	2,04	1,69	2,12	1,98	2,44	2,33
Invalid/NoResp	4,39	4,84	2,72	3,39	3,17	2,97	6,34	3,26

Source: Author's calculations based on ECHP data.

Note: Cases weighted by RG002.

Table 6 – Measures of model fit

	Model I: proportion of individuals that are CGPs		*Model II: proportion of CGPs caring for children up to 5*		*Model III: proportion of CGPs caring for children up to18*	
	BIC	AIC	BIC	AIC	BIC	AIC
A	-1619.65	0.59743	-906.059	0.736147	-900.299	0.885272
P	-2481.52	0.490267	-1591.44	-0.78036	-1572.43	0.966822
C	-2191.071	0.6690613	-1436.439	0.8378297	-1432.934	0.9732708
AC	-1319.519	0.9111973	-743.9925	0.801916	-741.7287	1.100918
PC	-2150.9	0.696907	-1398.23	0.877929	-1393.7	1.016755
AP	-1579.78	0.639569	-869.817	0.9692717	-863.424	0.954205
APC	-1849.28	0.930755	-1195.12	1.088309	1196.018	1.209679